



An Energy-Efficiency Workshop and Exposition
Orlando, Florida

Alternative Financing Case Study
U.S. Army Garrison Fort Detrick and
The National Cancer Institute

Presenter:

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SAIC-Frederick, Inc.



- **WHERE:** Fort Detrick, Frederick, MD
800 Acres, 2 million gross square feet space
Largest employer in Frederick Co., MD
- **WHO:** USA Medical Research & Material Command
Plus 29 Other Tenant Organizations
- **MISSION:** Biomedical Research & Development
Medical Material Management
Global Telecommunications

The logo for the 2003 Energy event, featuring a stylized sunburst in yellow and orange, with the year '2003' in purple and the word 'Energy' in blue and white.

2003 Frederick Cancer Research & Development Center

- 70 acres
- 99 buildings (1940 - present) (Originally Army Facilities)
- Gross square feet = 1,167,810 (136-116,962 ft²)
- Net square feet = (107-77,935ft²)
- 2,053 employees (Government and Contractor)

The logo for Energy 2003 features a stylized sunburst in yellow and orange on the left. To its right, the word "Energy" is written in a blue, italicized font with a white outline, and "2003" is written in a purple, italicized font above it.

Energy 2003 National Cancer Institute

- Federally-funded Research & Development Center (FFRDC)
- Government Owned Contractor Operated (GOCO)
- Since 1971, 3 contractors have been awarded the operations contract
- SAIC 1995-2006

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SAIC-Frederick, Inc.

- Operations & Technical Support (OTS) Contractor to NCI
- Subsidiary of Science Applications International Corporation
- 5-year base period, one 2-year option
- 2001-2006
- 1,400 employees

The logo features a stylized sun with jagged rays in yellow and orange. A blue wave-like line is superimposed on the sun. The word "Energy" is written in a bold, blue, sans-serif font, and the year "2003" is written in a purple, sans-serif font to its right.

Executive Order 12902

- 30% reduction by 2005 using 1985 baseline

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Expanding Energy Legislation

Energy Policy Act of 1992 (EPACT)

- Requires agencies to reduce energy use **20%** by the year 2000 relative to use in 1985

Executive Order 12902 – March 1994

- Requires agencies to reduce energy use **30%** by the year 2005 relative to 1985

Executive Order 13123 – June 1999

- Requires agencies to implement a program to reduce energy consumption 20% by 2005 and 25% by 2010 at industrial, laboratory and research facilities (30% and 35% respectively for standard buildings) including GOCO facilities such as NCI

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Energy Policy Act of 1992

- Energy Management Requirements
 - 20% reduction by 2000
- Section 152 (f) – Utility Incentive Programs
- Agencies:
 - Are authorized and encouraged to participate in utility programs generally available to customers
 - May accept any financial incentives, goods, and services generally available to customers
 - Are encouraged to enter into negotiations with utilities to design cost effective programs to address unique needs of facilities used by agency



Our Loophole

- The Energy Policy Act of 1992 authorized and encouraged federal agencies to participate in utility incentive programs to increase energy efficiency
- The Act authorizes agencies to negotiate directly with utilities to design cost-effective demand management and conservation incentive programs to address unique facility needs
- The Act further provides for the agency to retain a share of the savings achieved through ECM's from appropriated fiscal year funds to use for additional energy efficiency measures until expended



Our Loophole (*continued*)

- Finally, the 1992 legislation directed agencies to encourage GOCO contractors to adopt and utilize energy conservation measures designed to reduce energy costs at such facilities which are ultimately borne by the federal government
- Executive Order No. 12902 specifically requires that agencies implement a program to reduce energy consumption 30% by 2005 at federal facilities, including GOCO facilities such as the NCI

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Pros and Cons of Utility Contracting

Pros

- Established Source – Eliminate selection process reducing time & resources needed
- Long-standing relationship with entity
- Payment through utility bill

Cons

- Loss of initial competition
- Guarantee & M&V may not be offered by utility

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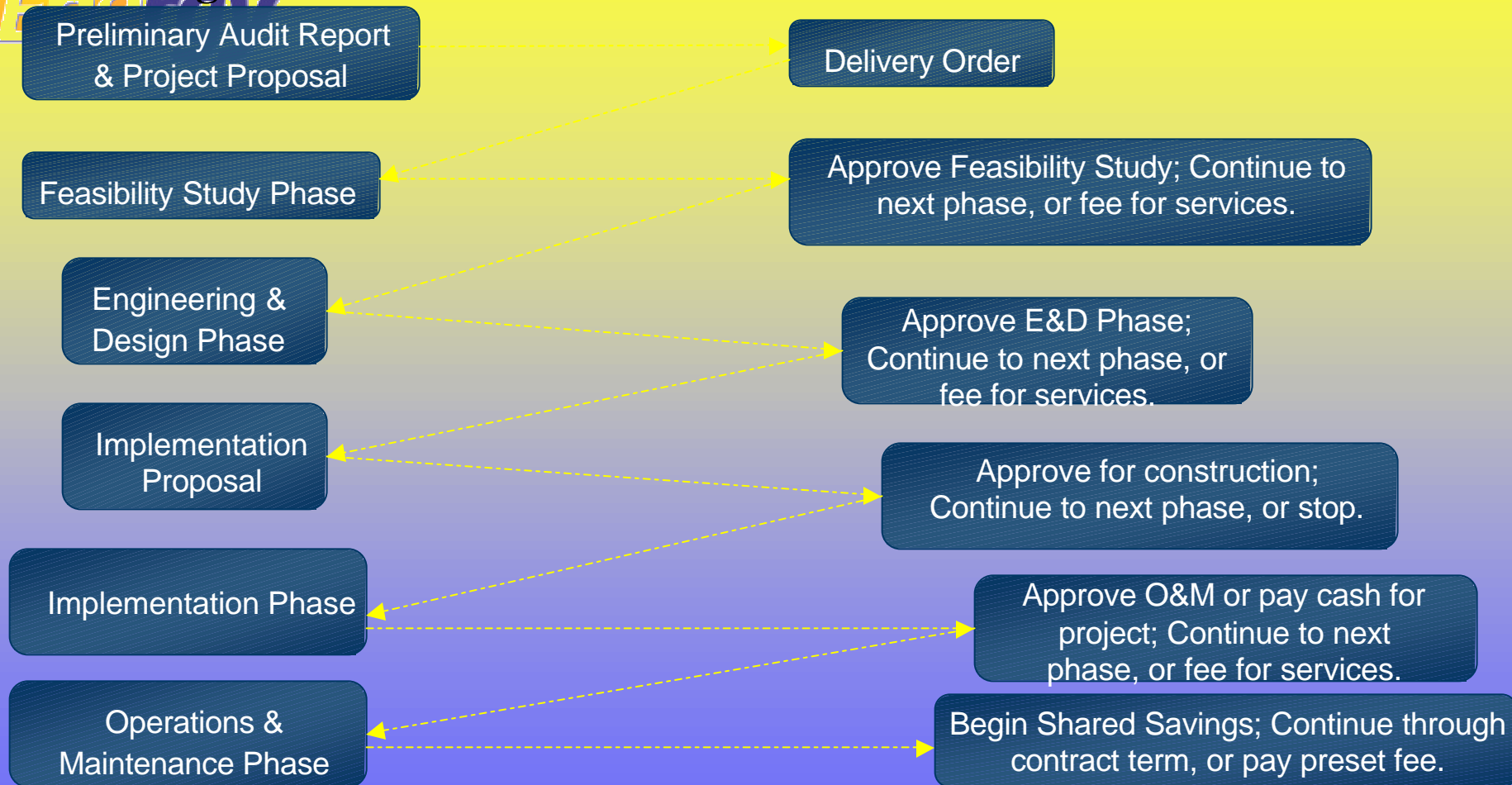
2003 General Requirements/ Energy Project Scope

- The Government requires installation of ECM's at Fort Detrick in Frederick Maryland, which includes the NCI-FCRDC to reduce energy consumption and corresponding utility costs.
- Contractor provides at no capital cost to the Government, all initial capital, labor, material, supplies and equipment to identify and implement energy conservation projects executed by contracts negotiated pursuant to the BOA.

Project Implementation Steps

APS Cogenex

NCI/USAG





Potential Energy Conservation Measures (ECM's)

- Lighting Retrofits
- 111,000 Ballasts
 - 6,000 Fixtures
 - 22,000 Fixtures
 - 2,000 Occupancy Sensors
 - 600 Exit Signs
- VAV Conversions
- Fume Hood Controls
 - 300 Plus Chemical Fume Hoods
- Energy Management Systems
 - Implement Control Strategies
 - Add BAS to a number of Buildings
- Regional/Central Chiller Plant (s)
 - Eliminate Redundancy
 - Many R-11 Refrigerants
 - Many existing Air Cooled Chillers in some Regions
 - Extended Payback Periods
 - Some Seed Money Available
- Substitution of Natural Gas for Electricity & Propane

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M&V General Approach

- M&V of projects has two components:
 - Confirming that (a) the baseline conditions were accurately defined, and (b) the proper equipment/systems were installed, and they have the potential to generate the predicted savings. This confirmation verifies ECMs potential to perform.
 - Determining the actual energy savings achieved by the installed ECM, which verifies the ECMs performance.
- The general approach to verify baseline and post-installation conditions involves inspections, spot measurements tests, and/or commissioning activities.



M&V General Approach (Continued)

- The general approach to determining energy savings involves comparing the energy use associated with a facility, or certain systems within a facility, before and after installation of the ECM. The before case is called the baseline. The after-installation case is called the post-installation case. Therefore:
 - $\text{Energy Savings} = \text{baseline energy use} - \text{post-installation energy use}$
- Each ECM or site will have a site-specific verification plan to determine the achieved savings. For each site or project, the baseline and post-installation energy use are defined using a combination of metering, billing analysis, and engineering calculations. In addition, values for certain factors affecting energy use and savings, and which are beyond the control of the Contractor, may be stipulated by the Government.

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2003 Method For Resolving Technical Disagreements

- In the event of a disagreement between the Contractor and the Government regarding issues such as baseline, baseline and post-installation adjustment, energy savings, calculation, or result of an annual energy audit, the following procedures may be used by the Government to seek resolution:
 - The Government, or Contractor, will select and hire an independent engineering firm, approved by the others, to examine the issue in dispute.



Method for Resolving Technical Disagreements (*Continued*)

- The Contractor and the Government will use the information provided by the engineering firm to resolve the disagreement(s) and establish any contract adjustments or modifications that may be necessary.
- Cost sharing of the engineering review will be negotiated prior to initiation.
- Nothing in this provision shall relieve the Contractor of any of its responsibilities to accomplish contract requirements.



Payment to the Government for Guaranteed Annual Cost Savings Shortfall

- Contractor failure to achieve the guaranteed annual cost savings to the Government, may result in overpayment of the Contractor annual payments for guaranteed energy cost savings.
- Savings performance shortfall will be established from M&V documentation acquired from monthly invoices and annual ECM performance verification report.



Payment to the Government for Guaranteed Annual Cost Savings Shortfall (*Continued*)

- Reimbursement of the Government overpayment of annual Contractor payment due to annual cost savings shortfall shall be made by deductions from the Contract's future monthly invoice(s).
- The Government may also adjust the next year's monthly Contractor payments downward to meet the projected annual costs savings level established by the annual ECM performance verification M&V documentation.



Payment to the Government for Guaranteed Annual Cost Savings Shortfall (*Continued*)

- If payments are adjusted, they will be restored when the Contractor can provide evidence that the cause of energy cost savings shortfall has been corrected and ECM performance for the following year will meet or exceed guaranteed levels.
- This remedy is in addition to any other remedy the Government may have under the contract or under the law, including its right to terminate for default.

A Successful Program



- Over \$21,000,000 invested to date
- Projects completed in 177 buildings (58% of base)
- Reduces energy use 19% of 1996 baseline
- First year verification 102% savings achieved
- Second year verification 106% savings achieved

Ft. Detrick's Comprehensive Conservation Program



- Variable Air Volume Conversions
- Economizers
- Chillers
 - ★ Efficiency Upgrades
 - ★ Centralized Plants
- Hi-efficiency Boilers
- Fume Hood Modifications
- Fan Coils
- Insulation/Steam Traps
- Hi-efficiency motors
- Lighting Retrofits & New Fixtures
- Occupancy Sensors
- Energy Management Systems
- Programmable Thermostats
- Water Conservation
- Window Replacements
- Variable Speed Drives
- Flash Steam Recovery



Delivery Orders	Capital Investment	# of Buildings	Status	Estimated Annual Savings	Year 1 Estimated vs. Actual Difference	Year 2 Estimated vs. Actual Difference	Year 3 Estimated vs. Actual Difference
NCI-Group 1	\$ 780,569	20	In service	\$ 98,908	107%	109%	
NCI-Group 2	\$ 1,058,571	18	In service	\$ 135,159	104%	105%	
NCI-Group 3	\$ 1,113,357	7	In service	\$ 146,622	102%	103%	
NCI-Chiller	\$ 5,448,742	N/A	In service	\$ 532,541	100%	101%	
NCI-Group 4	\$ 561,482	32	In service	\$ 69,861	97%		
NCI Steam	\$ 1,064,252	N/A	In service	\$ 151,818	101%		
NCI-Group 5	\$ 800,549	26	In service	\$ 105,204	101%		
NCI-Group 6	\$ 288,567	N/A	Final Design	\$ 45,439			
USAG-Group 1	\$ 2,065,211	20	In service	\$ 174,384	104%	114%	110%
USAG-Group 2	\$ 4,017,320	19	In service	\$ 565,796			
USAG-Group 3	\$ 1,344,187	11	In service	\$ 183,224	108%	114%	
USAG-Group 4	\$ 796,834	24	In service	\$ 102,063	99%		
USAG-Steam	\$ 5,857,826	N/A	In construction	\$ 681,674			
	\$ 25,197,467	177		\$ 2,983,315	102%	106%	110%

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2003 Protection of Financier's Interest

- The Government recognizes that project financing associated with Contractor performance on the contract may be accomplished using third-party financing, and as such, will permit the financing source to perfect a security interest in the installed energy conservation measures, subject to and subordinate to the rights of the Government. To provide protection of any financier's interest, the Contractor may be required to assign to its lenders some or all of its rights under this contract.



Protection of Financier's Interest (*Continued*)

- The Government will consider:
 - Requests for assignments of monies due or to become due under the contract, provided the assignment complies with the Assignment of Claims Act
 - A proposed takeover of contract performance in the event the Contractor defaults in performance. Requests for takeover of the contract on substantially the same terms and conditions will be approved if the proposed substitute party is acceptable to the Government.

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2003 Payment Schedule

- Payments will be made by the Government to the Contractor, as a share of the energy cost savings, on a monthly basis at a negotiated schedule starting sixty (60) calendar days following ECM completion and acceptance.
- The payment schedule will include the actual cost of ECM implementation (less financial incentives/rebates), and the cost of capital amortized over the payment period at a negotiated, fixed cost-of-money rate. Cost of capital will be amortized from the acceptance date.
- Monthly payments on any, individual project may not exceed the amount of energy savings calculated as defined in agreement.

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2003 Energy Refinancing - ?

- Currently pay pre-determined financing rates established in 1998, 1999, and 2000
- Discussions held with APS
- Options provided by lender
- Language modification to BOA
- Possible significant savings to Government



Awards

- 1998 DOE Annual Facility Award
- 2000 HHS Energy Award
- 2002 DOE Partnership for Energy Performance
- 2002 Presidential Award for Leadership in Federal Energy Management

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2003 Energy Conservation Basic Ordering Agreement

- Four Party Agreement – USAG, NCI, APS, and SAIC
- Signed in 1997
- Twelve projects completed – capital investment \$25.2 million
- Estimated annual savings \$3 million
- Net cost to Government \$0